

V. FUNDAMENTALS FOR EARTHWORK MANAGEMENT AT PETERSBURG NATIONAL BATTLEFIELD

When cultural and natural resources seem to be in conflict, priority is given to the cultural resources based on the following justifications:

- Petersburg National Battlefield was established specifically to preserve and interpret the historical events that occurred in 1864 and 1865. Therefore, Petersburg National Battlefield is a “cultural” park where the natural resources support the cultural resources.
- The Historic Sites, Buildings and Antiquities Act (see Appendix B) declared a national policy to preserve for public use historic sites, buildings and objects of national significance. This Act places great importance on the protection of battlefields and forts.
- The Organic Act directs us to protect the resources and to provide for the enjoyment of those same resources by the public. (See Appendix A)

The principles outlined below are based on over twenty years of field applications at Petersburg National Battlefield. Additionally, these principles are cost effective and can be maintained with park resources, staff and volunteers.

A. Tree Removal

The removal of trees from earthworks is necessary to protect them from the negative impacts that were previously listed in Section IV.

B. Erosion Control

Once the trees are removed, a grass cover on the earthworks is necessary to help prevent erosion. Additionally, the grass cover will enable visitors to better visualize the contours and features associated with these earthworks.

C. Seed Selection

The grass seed selected is based on:

- how effective is it in preventing erosion on sloped surfaces
- if the grass will grow well in our particular region
- if the soil is conducive to the selected seed
- how quickly the seed will germinate
- the availability of the seed
- the cost of the seed
- field results, not theories
- the effectiveness of selected grass seed being planted via hydroseeding techniques

For over a quarter century, the park has been using a variety of turf grasses for erosion control on earthworks. In 1994, the park began using *single stem tall fescue* exclusively for earthwork preservation projects because of its characteristics as an effective erosion control. This grass:

- provides a thick, uniform coverage
- is drought resistant
- grows well in our region and soils
- is readily available from local markets
- is quick to germinate and provide a thorough cover
- is economically priced
- can be seeded easily by hydroseeding
- is an effective erosion control grass
- grows well on sloped surfaces, and
- has yielded good results in field applications

Tall Fescue works well when allowed to grow high. It then has a natural tendency to lay over. This provides a protective layer from falling precipitation, which runs over the long blades of grass. The grass is mowed once in the spring and once in the fall at a height of five inches.

On February 3, 1999, Executive Order 13122 - Invasive Species was issued. (See Appendix C) This Act was written to address the introduction, spread, and control of invasive species and provide for the restoration of native species. Tall Fescue, like most other turf grasses, is not a native grass even though it has been growing in North America for a couple hundred years. There is also debate about its invasive tendencies. (Some specialists on this subject believe it is not invasive at all while others believe it is, but only at a low level.) Sec. 2 (3) of this Act also states that the agency is not authorized to carry out actions that are likely to cause or promote the introduction or spread of invasive species unless the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive plants.

Even with the issuance of this Act, the Park still feels its use of fescue is justified because:

- There appears to be no risk of harm in conjunction with its use.
- Its benefits for erosion control have been field tested and proven effective.
- Its use on sloped surfaces has been endorsed by the Natural Resource Conservation Service, NRCS (formerly known as the Soil Conservation Service). In addition, the NRCS does not advise the use of native grasses on steep sloped surfaces for the purpose of erosion control. They also stated that native grasses grow well in flat, open fields but not on sloped surfaces like earthworks.



Battery IV has been used to test the effects of native grass on earthworks but its use has not proven to be an effective cover. Native grasses are growing well in field adjacent to the earthworks but not on the steep slopes of the earthworks. There, oak, sweetgum, holly, greenbriar, poison ivy, Japanese Honeysuckle and pine saplings outcompete the native grasses. (Battery IV, 1/2000)

- The Virginia Natural Heritage Program endorses our use of fescue. They state that the park is justified in using fescue over native species because of the park's location (i.e. longitude and latitude), the resources we are preserving (i.e. earthworks), the park's mandate to protect the earthworks (i.e. enabling legislation), and the unsuccessful establishment of native grasses on earthworks at Battery IV.
- The Army Corps of Engineers have observed the field results of the park's earthworks preservation techniques and endorses the park's preservation strategies.
- Fescue continues to be widely used throughout the National Park Service, especially around visitor centers and a variety of public use areas. This grass is not highly invasive and has been in use in America for a couple hundred years. The National Park Service has neither banned nor restricted its use because of its benefits in landscaped areas and its effectiveness in erosion control.

D. Hydroseeding

Hydroseeding is the most cost-effective form of seeding large areas. It provides erosion protection even before the grass germinates, and it is less damaging to the earthworks than hand seeding or plugging.



Fort Stedman (9/1997)

E. Maintenance

Earthworks can be economically maintained with park resource, i.e. staff and funding.
(See Section VIII)